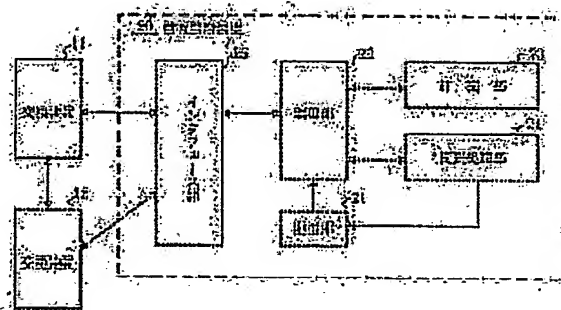


**INCOMING CALL CONTROL SYSTEM****Publication number:** JP7058856 (A)**Publication date:** 1995-03-03**Inventor(s):** YAMAZAKI TATSUHIKO**Applicant(s):** NIPPON ELECTRIC CO**Classification:****- international:** H04M3/42; H04M3/54; H04Q3/58; H04M3/42; H04M3/54; H04Q3/58; (IPC1-7): H04M3/54; H04M3/42; H04Q3/58**- European:****Application number:** JP19930197468 19930809**Priority number(s):** JP19930197468 19930809**Also published as:**

JP2606091 (B2)

**Abstract of JP 7058856 (A)**

**PURPOSE:** To reduce the required time till the end of connection without need of registration revision from a subscriber side even when a behavior pattern of an opposite party to which the call reception is desired by avoiding that the connection with an opposite party desired of call reception is not incomplete. **CONSTITUTION:** Plural destinations with call reception priority are stored corresponding to a predetermined time zone are stored to each subscriber are stored in a storage section 21. A control section 22 identifies a call destination subscriber based on a call connection signal and retrieves a terminal equipment of the call destination at a relevant time zone, and makes incoming call processing according to the call reception priority added thereto. A measurement section 23 measures connection number of times of a complete call of a terminal equipment being a called destination for each prescribed band and a revision processing section 24 revises the called priority in the order of many connection number of times of the complete call measured in this way.



Data supplied from the esp@cenet database — Worldwide



## 【特許請求の範囲】

【請求項 1】 端末を収容する複数の交換装置と、この複数の交換装置に接続された情報管理装置とを備え、前記情報管理装置は、各加入者毎に所定の時間帯に対応する着信先の端末をそれぞれ記憶する記憶部と、前記複数の内の一つの交換装置からその収容する加入者からの呼接続信号を入力したときにその着信加入者を識別しこの記憶部に記憶された該当する時間帯に対応する着信先の端末に転送するようにこの交換装置に対して制御を行う制御部とを含む着信制御方式において、前記記憶部には前記各加入者毎に前記所定の時間帯に対応する着信先の端末として時間帯に応じて設定された着信優先順位が付加された複数の端末が記憶され、前記制御部は前記呼接続信号に基づき該当する時間帯に対応する前記記憶された複数の端末を検索しそれに付加された着信優先順位に従って着信制御を行う手段を含むことを特徴とする着信制御方式。

【請求項 2】 前記情報管理装置は前記各加入者毎に前記所定の時間帯に対応する着信先の端末に対する完了呼の接続を計測する計測部と、この計測部の計測結果に基づき完了呼の接続回数の多い順に前記着信優先順位を変更する変更処理部とを含む請求項 1 記載の着信制御方式。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は、電話交換システムの着信制御方式に利用する。加入者からの登録手続きにより同一の番号の呼に対する実際の着信先を変更できる着信制御方式に利用する。特に、加入者毎に所定の時間帯に対応した複数の着信先の端末を着信優先順位を付加して登録しておき、それに従って着信制御を行う着信制御方式に関するものである。

## 【0002】

【従来の技術】 従来、着信制御方式は、電話交換システムにおける転送サービスを実現するために行われていた。たとえば、電話交換システムに、加入者毎に複数の着信先または転送先の情報を登録する手段と、これらの着信先または転送先への着信または転送を実行する開始時刻および終了時刻の制御情報を登録する手段とを備え、電話端末に着信または転送しようとする呼が生じたときに、時刻情報等の外部条件と上述した制御情報とを照合し、その照合結果に従って着信先または転送先を特定して電話端末に対する着信または転送を制御する技術が提案されている（特開昭 64-22191 号公報）。

## 【0003】

【発明が解決しようとする課題】 しかし、このような従来の着信制御方式では、電話交換システム内に登録された特定の時間帯における着信先または転送先は一ヶ所のみであるので、同一時間帯において複数の着信先または転送先が想定される場合に対処できない欠点があった。ま

た、電話交換機システム内に複数の着信先または転送先の情報と、これら着信先または転送先への着信または転送を実行する開始時刻と終了時刻との制御情報とを登録しておくだけなので、あらかじめ登録した着信先または転送先に対して実際に着信または転送を実現する開始時刻および終了時刻の変更を要する場合に、加入者が登録変更を行う必要が生じる欠点があった。

【0004】 本発明は前記の欠点を解決するもので、着信したい相手との接続が不完了になることを回避し、さらに着信したい相手の行動パターンが変化しても、加入者側から登録変更をすることなしに、接続完了までの所要時間を短く保つことができる着信制御方式を提供することを目的とする。

## 【0005】

【課題を解決するための手段】 本発明は、端末を収容する複数の交換装置と、この複数の交換装置に接続された情報管理装置とを備え、前記情報管理装置は、各加入者毎に所定の時間帯に対応する着信先の端末をそれぞれ記憶する記憶部と、前記複数の内の一つの交換装置からその収容する加入者からの呼接続信号を入力したときにその着信加入者を識別しこの記憶部に記憶された該当する時間帯に対応する着信先の端末に転送するようにこの交換装置に対して制御を行う制御部とを含む着信制御方式において、前記記憶部には前記各加入者毎に前記所定の時間帯に対応する着信先の端末として時間帯に応じて設定された着信優先順位が付加された複数の端末が記憶され、前記制御部は前記呼接続信号に基づき該当する時間帯に対応する前記記憶された複数の端末を検索しそれに付加された着信優先順位に従って着信制御を行う手段を含むことを特徴とする。

【0006】 また、本発明は、前記情報管理装置は前記各加入者毎に前記所定の時間帯に対応する着信先の端末に対する完了呼の接続を計測する計測部と、この計測部の計測結果に基づき完了呼の接続回数の多い順に前記着信優先順位を変更する変更処理部とを含むことができる。

## 【0007】

【作用】 各加入者毎に所定の時間帯に対応する着信先の端末として着信優先順位が付加された複数の端末を記憶しておき、呼接続信号に基づき該当する時間帯に対応するこの記憶された複数の端末を検索しそれに付加された着信優先順位に従って着信先の端末を決めて転送する。また、所定の時間帯毎に着信先の端末の完了呼の接続回数を計測し、この完了呼の接続回数の多い順に着信優先順位を自動的に変更する。これにより着信したい相手との接続が不完了になることを回避し、さらに着信したい相手の行動パターンが変化しても、加入者側から登録変更をすることなしに、接続完了までの所要時間を短く保つことができる。

## 【0008】

【実施例】本発明の実施例について図面を参照して説明する。

【0009】図1は本発明一実施例着信制御方式のブロック構成図である。図2は本発明の着信制御方式の情報管理装置のブロック構成図である。図1および図2において、着信制御方式は、端末を収容する複数の交換装置11、12と、複数の交換装置11、12に接続された情報管理装置20とを備え、情報管理装置20は、各加入者毎に所定の時間帯に対応する着信先の端末をそれぞれ記憶する記憶部21と、複数の内の一つの交換装置11、12からその収容する加入者からの呼接続信号を入力したときにその着信加入者を識別し記憶部21に記憶された該当する時間帯に対応する着信先の端末に転送するようにこの交換装置11、12に対してインタフェース部25を通して制御を行う制御部22とを含む。

【0010】ここで本発明の特徴とするところは、記憶部21には各加入者毎に所定の時間帯に対応する着信先の端末として時間帯に応じて設定された着信優先順位が付加された複数の端末が記憶され、制御部22は前記呼接続信号に基づき該当する時間帯に対応する前記記憶された複数の端末を検索しそれに付加された着信優先順位に従って着信制御を行う手段を含むことにある。

【0011】また、情報管理装置20は各加入者毎に所定の時間帯に対応する着信先の端末に対する完了呼の接続を計測する計測部23と、計測部23の計測結果に基づき完了呼の接続回数の多い順に着信優先順位を変更する変更処理部24とを含む。このような構成の着信制御方式の動作について説明する。

【0012】図3は本発明の着信制御方式の加入者の時間帯別着信優先順位および時間帯別使用回数を示す図である。図4は本発明の着信制御方式の情報管理装置の動作を示すフローチャートである。

【0013】図3は端末31～33を着信端末として使用する加入者Aについて、時間帯T<sub>1</sub>～T<sub>3</sub>、別の端末31～33の完了呼の接続回数Cを示す。ここで、時間帯については時間帯T<sub>1</sub>～T<sub>3</sub>を1周期としてこれが繰り返されるものとする。

【0014】図4において、情報管理装置20の制御部22が、端末34を使用する加入者Bからの加入者Aに対する接続要求信号を、インタフェース部25を介して交換装置12より受けた場合に(S1)、制御部22は記憶部21に登録されている端末の着信優先順位を検索し(S2)、着信すべき端末を決定する(S3)。

【0015】ここで時間帯がT<sub>1</sub>であるとする、図3に示すようにこのときの加入者Aに対する1番目の着信端末として端末31が決定され、制御部22はインタフェース部25を介して交換装置11に対して接続指示信号を送出する。これにより加入者Aとの接続が端末31において完了した場合に、制御部22は端末31より、インタフェース部25を介して接続完了信号を受け取

り、該当端末に着信できたことを確認する(S5)。

【0016】もしここで端末31において、一定時間応答が無く加入者Aと接続できなかった場合には、端末31を収容する交換装置11が自動的に制御部22に接続完了信号を送出し、また端末31において加入者A以外の加入者と接続された場合には、着信側の指示により端末31を収容する交換装置11が、制御部22に接続完了を送出する。

【0017】このようにして、制御部22は、インタフェース部25を介し接続完了信号を受け取り、該当端末に着信できなかったことを確認し(S5)、再び記憶部21に登録されている端末の着信優先順位を検索することにより(S2)、着信すべき端末を決定する(S3)。以下同様にし接続指示信号を送出するが、端末32、33ともに接続完了となった場合には、加入者Aに対するメッセージを記憶部21で受け付け(S4)、さらにメッセージを受け付けたことを加入者Aの各端末31、32、33で確認できるように、制御部22からインタフェース部25および交換装置11、12を介してメッセージ受付通知信号を送出する。

【0018】最終的に加入者Bから加入者Aへの接続要求に対して、端末33で接続完了したとすると、端末33から交換装置12、インタフェース部25を介して接続完了信号を受けることで端末33への着信を確認した(S5)制御部22は、計測部23に対して端末33への着信が完了したことを通知し、通知を受けた計測部23は、図3に示す現在「1」に設定されている時間帯T<sub>1</sub>における端末33の完了呼の接続回数に「1」を加算して「2」とし(S6)、その後端末31、32、33の各々の完了呼の接続回数を比較した結果、現在の着信優先順位を変更する必要がないと判断し(S7)、一連の処理を終了する。

【0019】その後新たに同じ時間帯T<sub>1</sub>において、再び加入者Aに対して接続要求があり、同様にして端末33に着信した場合に、または逆に加入者Aが端末33から発信をした場合に、端末33が加入者Aによって使用されたことを制御部22から通知された計測部23は、前回「2」に設定された時間帯T<sub>1</sub>における端末33の完了呼の接続回数に「1」を加算して「3」とし(S6)、その後端末31～33の各々の完了呼の接続回数を比較した結果、端末32と端末33との着信優先順位を変更する必要があると判断したとすると(S7)、計測部23は変更処理部24は、記憶部21に登録されている着信優先順位を変更して(S8)、新たに端末31、33、32の順に登録しなおす。

【0020】

【発明の効果】以上説明したように、本発明は、着信したい相手との接続が完了になることを回避し、さらに着信したい相手の行動パターンが変化しても、加入者側から登録変更をすることなしに、接続完了までの所要時間

を短く保つことができる優れた効果がある。

【図面の簡単な説明】

【図 1】本発明一実施例着信制御方式のブロック構成図。

【図 2】本発明の着信制御方式の情報管理装置のブロック構成図。

【図 3】本発明の着信制御方式の加入者の端末時間帯別着信優先順位および時間帯別使用回数を示す図。

【図 4】本発明の着信制御方式の情報管理装置の動作を示すフローチャート。

【符号の説明】

- \* 11、12 交換装置  
20 情報管理装置  
21 記憶部  
22 制御部  
23 計測部  
24 変更処理部  
25 インタフェース部  
31～34 端末  
C 完了呼の接続回数  
10 P 着信優先順位  
\* T<sub>1</sub>～T<sub>n</sub> 時間帯

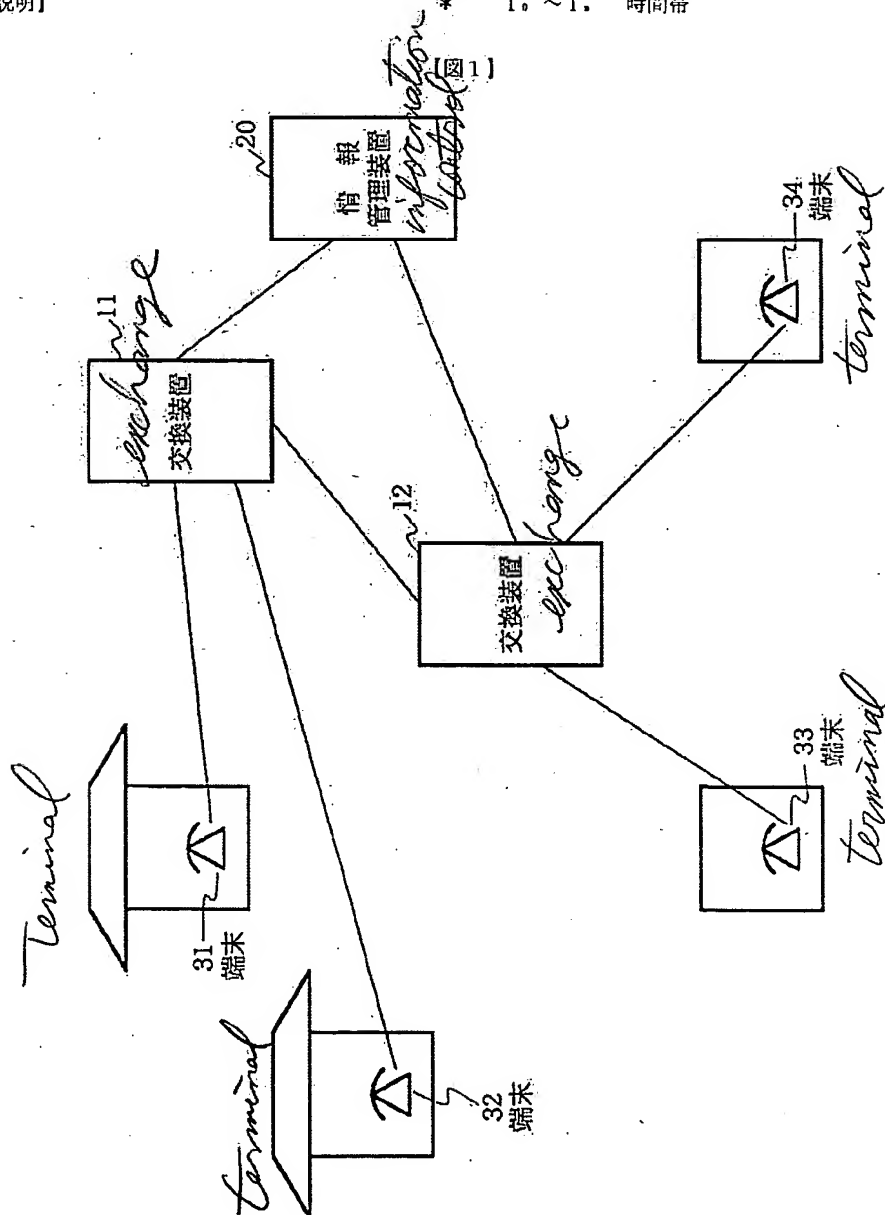
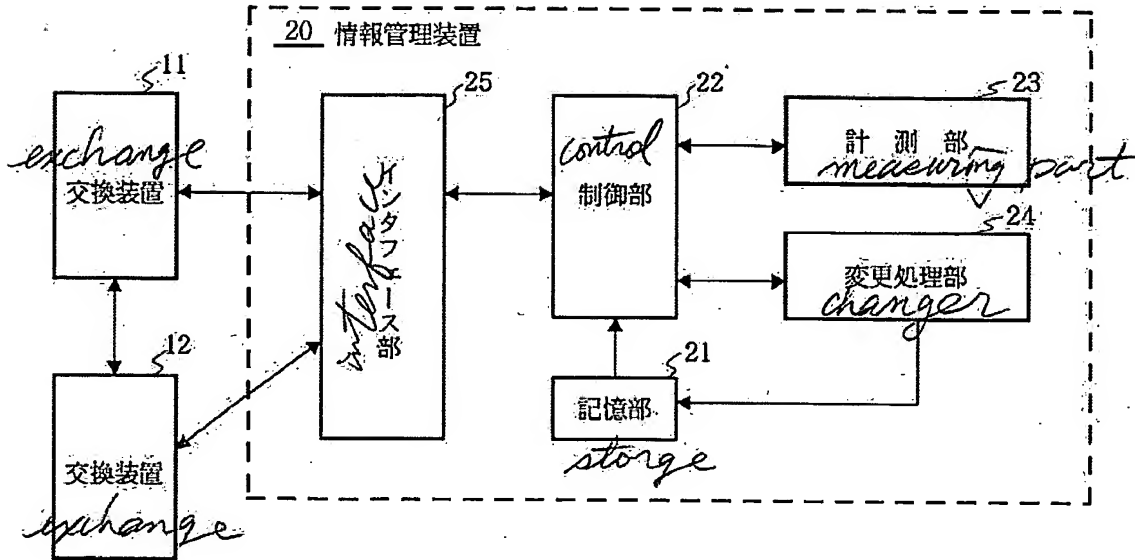


Fig. 1

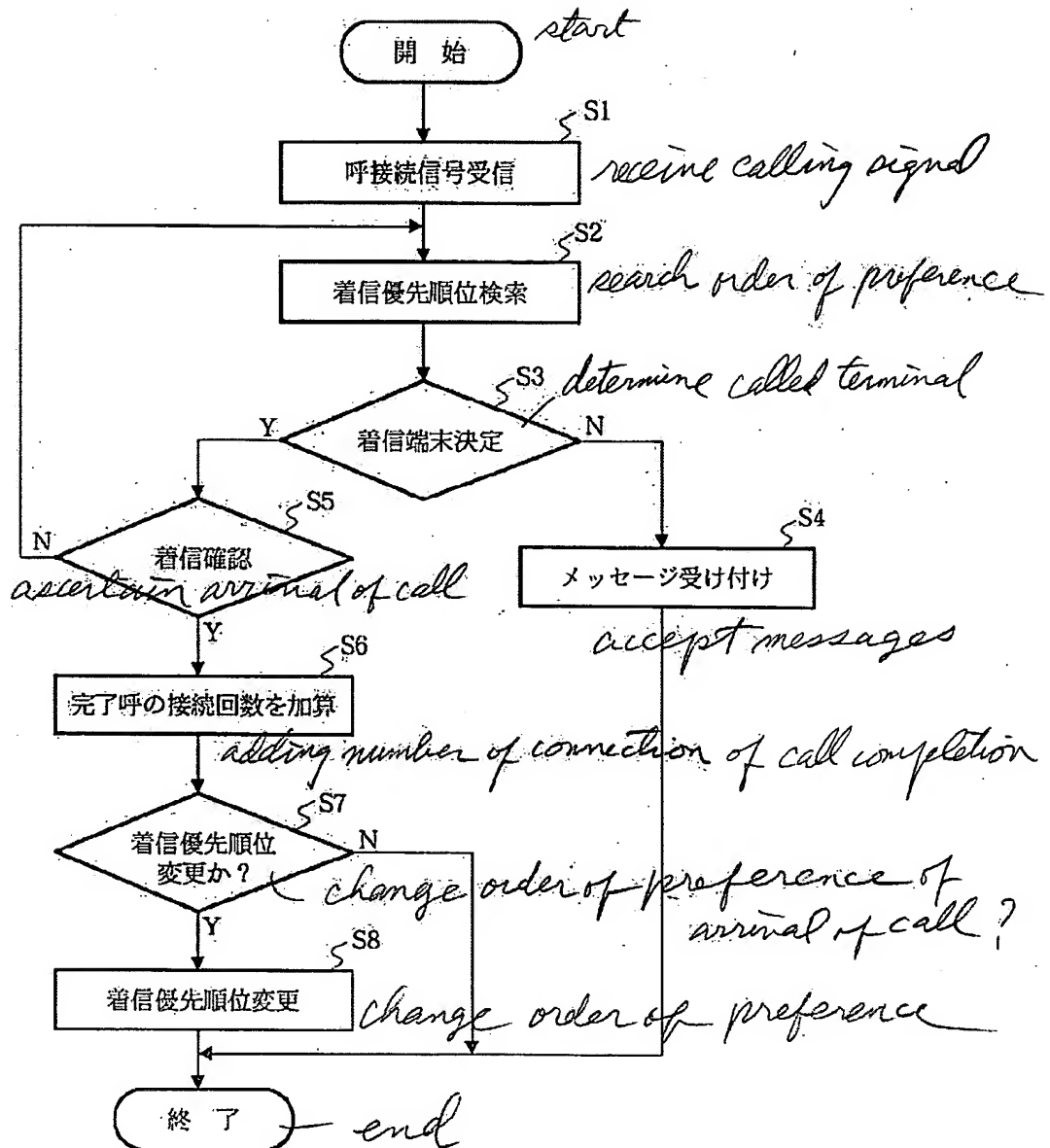
[図2] Fig. 2



[図3] Fig. 3

		端末31	端末32	端末33	端末34
時間帯T <sub>1</sub>	着信優先順位 P	1	2	3	—
	完了呼の接続回数 C	5	2	1	—
時間帯T <sub>2</sub>	P	1	3	2	—
	C	3	1	2	—
⋮		⋮	⋮	⋮	⋮
時間帯T <sub>n</sub>	P	P <sub>n,1</sub>	P <sub>n,2</sub>	P <sub>n,3</sub>	—
	C	C <sub>n,1</sub>	C <sub>n,2</sub>	C <sub>n,3</sub>	—

【図4】



2) Machine Translation of the cited reference 2(Kokai No.H07-58856) (revised portions (0019) and (0031) are underlined and several terms are unified)

[Claim 1] A call controlling method using a plurality of a telephone switching apparatus each provided with an information managing apparatus connected thereto, said information managing apparatus comprises with

Two or more terminals in which a mail arrival priority set up according to a time zone as a terminal of a mail arrival place corresponding to said predetermined time zone for said every member was added to said storage parts store in a mail arrival control system characterized by comprising the following are memorized, A mail arrival control system, wherein said control section contains a means to perform mail arrival control according to a mail arrival priority which searched said two or more memorized terminals corresponding to a time zone applicable based on said call connection signal, and was added to it.

Two or more swap devices which accommodate a terminal.

A storage parts store is provided with an information management device connected to two or more of these swap devices, and said information management device remembers a terminal of a mail arrival place corresponding to a predetermined time zone to be for every member, respectively.

A control section which controls to this swap device to transmit to a terminal of a mail arrival place corresponding to an applicable time zone which identified that terminating subscriber and was memorized by this storage parts store when a call connection signal from [ from one swap device in said plurality ] that member that accommodates is inputted.

[Claim 2]The mail arrival control system comprising according to claim 1:

A measuring part in which said information management device measures connection of a completed call to a terminal of a mail arrival place corresponding to said predetermined time zone for said every member.

A change processing part which changes said mail arrival priority into order with much number of times of connection of a completed call based on a measuring result of this measuring part.

#### DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention is used for the mail arrival control system of a telephone exchange system. It uses for the mail arrival control system which can change the actual mail arrival place to the call of the same number by the registration procedure from a member. A mail arrival priority is added, the terminal of two or more mail arrival places which corresponded to the predetermined time zone for every member especially is registered, and it is related with the mail arrival control system which



performs mail arrival control according to it.

[0002]

[Description of the Prior Art]Conventionally, the mail arrival control system is held in order to realize the call forwarding service in a telephone exchange system. For example, a means to register the information on two or more mail arrival places or the destination into a telephone exchange system for every member, When the call which tends to be provided with a means to register the control information on the start time and finish time which perform the arrival or transmission to these mail arrival places or destinations, and it is going to receive for which a message or transmit to a telephone terminal arises, External conditions, such as time information, and the control information mentioned above are compared, and the art which pinpoints a mail arrival place or the destination according to the collated result, and controls the arrival or transmission to a telephone terminal is proposed (JP,64-22191,A).

[0003]

[Problem(s) to be Solved by the Invention]However, in such a conventional mail arrival control system, since the number of the mail arrival places or the destinations in the specific time zone registered into the telephone exchange system was one, there was a fault which cannot cope with it when two or more mail arrival places and destinations are assumed in the same time zone. Since the information on two or more mail arrival places or the destination and the control information on the start time and finish time which perform the arrival or transmission to these arrival place or the destination are only registered into the telephone-switchboard system, When requiring change of the start time and finish time which actually realize arrival or transmission to the mail arrival place or the destination registered beforehand, there was a fault to which a member will need to make a registration change.

[0004]Even if the action pattern of the partner who wants for this invention to solve the aforementioned fault, to avoid that connection with the partner who wants to receive a message becomes non completion, and to receive a message further changes, It aims at providing the mail arrival control system which can keep short the time required to the completion of connection, without making a registration change from the member side.

[0005]

[Means for Solving the Problem]This invention is provided with two or more swap devices which accommodate a terminal, and an information management device connected to two or more of these swap devices, and said information management device, A storage parts store which memorizes a terminal of a mail arrival place corresponding to a predetermined time zone for every member, respectively. When a call connection signal from [ from one swap device in said plurality ] the member who accommodates is inputted. In a mail arrival control system containing a control section which controls to this swap device to transmit to a terminal of a mail arrival place corresponding to an applicable time zone which was alike, identified that terminating subscriber and was memorized by this storage parts store, Two or more terminals in which a mail arrival priority set up according to a time zone as a terminal of a mail

arrival place corresponding to said predetermined time zone for said every member was added to said storage parts store are memorized, Said control section contains a means to perform mail arrival control according to a mail arrival priority which searched said two or more memorized terminals corresponding to a time zone applicable based on said call connection signal, and was added to it.

[0006] This invention can contain a measuring part in which said information management device measures connection of a completed call to a terminal of a mail arrival place corresponding to said predetermined time zone for said every member, and a change processing part which changes said mail arrival priority into order with much number of times of connection of a completed call based on a measuring result of this measuring part.

[0007]

[Function] Two or more terminals in which the mail arrival priority was added as a terminal of the mail arrival place corresponding to a predetermined time zone for every member are memorized, and the terminal of a mail arrival place is decided and transmitted according to the mail arrival priority which searched two or more of these memorized terminals corresponding to a time zone applicable based on a call connection signal, and was added to it. The number of times of connection of the completed call of the terminal of a mail arrival place is measured for every predetermined time zone, and a mail arrival priority is automatically changed into order with much number of times of connection of this completed call. It avoids that connection with the partner who wants for this to receive a message becomes non completion, and the time required to the completion of connection can be kept short, without making a registration change from the member side, even if the action pattern of the partner who wants to receive a message further changes.

[0008]

[Example] The example of this invention is described with reference to drawings.

[0009] Drawing 1 is a block lineblock diagram of this invention one example arrival control system. Drawing 2 is a block lineblock diagram of the information management device of the mail arrival control system of this invention. Two or more swap devices 11 and 12 with which a mail arrival control system accommodates a terminal in drawing 1 and drawing 2, Have the information management device 20 connected to two or more swap devices 11 and 12, and the information management device 20, The storage parts store 21 which memorizes the terminal of the mail arrival place corresponding to a predetermined time zone for every member, respectively, When the call connection signal from [ from the one swap device 11 and 12 in plurality ] the member who accommodates is inputted. The control section 22 which controls through the interface part 25 to these swap devices 11 and 12 to transmit to the terminal of the mail arrival place corresponding to the applicable time zone which was alike, identified that terminating subscriber and was memorized by the storage parts store 21 is included.

[0010] The place by which it is characterized [ of this invention ] here, two

or more terminals in which the mail arrival priority set up according to the time zone as a terminal of the mail arrival place corresponding to a predetermined time zone for every member was added to the storage parts store 21 are memorized, There is the control section 22 in a means to perform mail arrival control according to the mail arrival priority which searched said two or more memorized terminals corresponding to a time zone applicable based on said call connection signal, and was added to it being included.

[0011]The information management device 20 contains the measuring part 23 which measures connection of the completed call to the terminal of the mail arrival place corresponding to a predetermined time zone for every member, and the change processing part 24 which changes a mail arrival priority into order with much number of times of connection of a completed call based on the measuring result of the measuring part 23. Operation of the mail arrival control system of such composition is explained.

[0012]Drawing 3 is a figure showing the mail arrival priority classified by time zone of the member of the mail arrival control system of this invention, and the use count according to time zone. Drawing 4 is a flow chart which shows operation of the information management device of the mail arrival control system of this invention.

[0013]the member A for whom drawing 3 uses the terminals 31-33 as a called terminal -- time zone  $T_0 - T_m$  -- the number of times C of connection of the completed call of another terminals 31-33 is shown. Here, about a time zone, this shall be repeated by making time zone  $T_0 - T_m$  into one cycle.

[0014]In drawing 4, the control section 22 of the information management device 20 the connection request signals to the member A from the member B who uses the terminal 34, When it receives from the swap device 12 via the interface part 25, (S1) and the control section 22 search the mail arrival priority of the terminal registered into the storage parts store 21 (S2), and determine the terminal which should receive a message (S3).

[0015]Supposing a time zone is  $T_0$  here, as shown in drawing 3, the terminal 31 is determined as 1st called terminal to the member A at this time, and the control section 22 sends out a connect indication signal to the swap device 11 via the interface part 25. When connection with the member A is completed in the terminal 31 by this, it checks that the control section 22 received the connection completion signal via the interface part 25, and has received a message from the terminal 31 to the applicable terminal (S5).

[0016]When there is no fixed time response and it is not able to connect with the member A in the terminal 31 here, When the swap device 11 which accommodates the terminal 31 sends out a connection non completion signal to the control section 22 automatically and is connected with members other than the member A in the terminal 31, the swap device 11 which accommodates the terminal 31 with directions of a destination side sends out connection non completion to the control section 22.

[0017]Thus, the control section 22 receives a connection non completion signal via the interface part 25, checks that a message has not been received to an applicable terminal (S5), and determines (S2) and the terminal which

should receive a message by searching the mail arrival priority of the terminal again registered into the storage parts store 21 (S3). Although a connect indication signal is sent out like the following, When the terminals 32 and 33 become connection non completion, A message reception notification signal is sent out via the interface part 25 and the swap devices 11 and 12 from the control section 22 so that the message to the member A may be received by the storage parts store 21 and it can check (S4) and having received the message further at each terminals 31, 32, and 33 of the member A.

[0018]Supposing it carries out the completion of connection from the member B at the terminal 33 to the connection request to the member A eventually, The control section (S5) 22 which checked the arrival to the terminal 33 by receiving a connection completion signal from the terminal 33 via the swap device 12 and the interface part 25, The measuring part 23 which reported that the arrival to the terminal 33 was completed to the measuring part 23, and received the notice, Add "1" to the number of times of connection of the completed call of the terminal 33 in time zone T0 set up now "1" it shown in drawing 3 at, and it is referred to as "2" (S6), As a result of comparing the number of times of connection of the completed calls of 31, 32, and 33 in the end of the back end, it judges that it is not necessary to change the present mail arrival priority (S7), and a series of processings are ended.

[0019]In the same time zone T0, there is newly a connection request to the member A again after that, When a message is similarly received to the terminal 33, or when the member A does dispatch from the terminal 33 conversely, The measuring part 23 to which what the terminal 33 was used for by the member A was notified from the control section 22, Add "1" to the number of times of connection of the completed call of the terminal 33 in time zone T0 set as last time "2", and it is referred to as "3" (S6), As a result of comparing the number of times of connection of the completed calls of 31-33 in the end of the back end, supposing it judges that it is necessary to change the mail arrival priority of the terminal 32 and the terminal 33 (S7), The measuring part 23 changes the mail arrival priority registered into the storage parts store 21 (S8), and newly reregisters the change processing part 24 in order of the terminals 31, 33, and 32.

[0020]

[Effect of the Invention]As explained above, this invention avoids that connection with the partner who wants to receive a message becomes non completion, and it has the outstanding effect which can keep short the time required to the completion of connection, without making a registration change from the member side, even if the action pattern of the partner who wants to receive a message further changes.